HF RFID SYSTEM
READ/WRITE MODULES (RWM)
RLS-1303-020

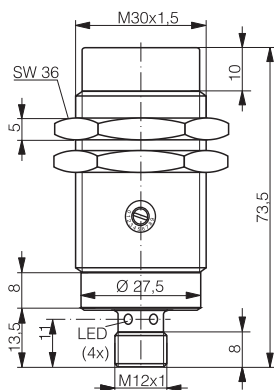| HOUSING	READ/WRITE DISTANCE
M30	60 mm*

- ✓ M30 Metal threaded housing
- ✓ Sensing face of PBTP
- ✓ Insensitive to dirt
- ✓ ISO15693 compatible
- ✓ Networkable RWM using ContriNET protocol
- ✓ Cost optimized solution

CE   FC   IC   IP67

HF ISO 15693

M30x1,5
SW 36
10
5
73,5
8
Ø 27,5
13,5
1
LED (4x)
8
M12x1

* Please refer to table page 5

GENERAL DATA

Carrier frequency	13.56 MHz
Compatible standard	ISO 15693
Maximum transmission speed	26.5 kbit/s
Read-write distance max.	60 mm with RTP-0501-020

INTERFACE

RS-485 configuration	
Data transfer rate (default in bold)	**115 200** / 38 400 / 19 200 baud
Number of bits 7 / stop bits / parity	8 / 1 / None
RWM configuration	
LED yellow on	RWM live
LED yellow blinking	Transponder detected
ContriNET protocol	✓

ELECTRICAL DATA

Supply voltage range (Ub)	14...32 VDC
No-load supply current (field off)	20 mA
Max. current consumption (no load)	60 mA
Polling current	30 mA
Short-circuit protection	✓
Voltage reversal protection	✓
Max. output current	

MECHANICAL DATA

| Protection degree	IP67
Ambient temperature range TA**	-25...+80 °C
Storage temperature range TS***	-25...+80 °C
Sensing face material	PBTP
Housing material	Stainless steel
Connector type	M12 4-pin
Weight (incl. nuts)	95 g

** Read/write operations possible
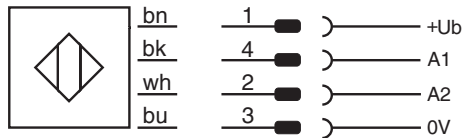*** Data retention and mechanical stability limit

MOUNTING RECOMMENDATIONS

CLEARANCE

Read/write modules must not mutually influence each other. For this reason, a minimum distance of 2 x D between the devices must be observed.
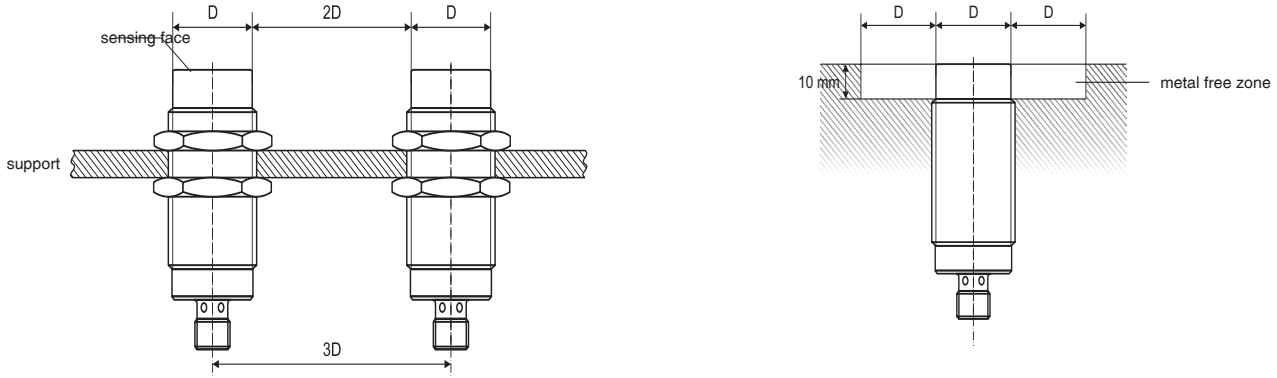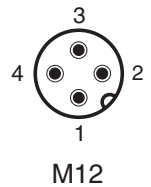

WIRING DIAGRAM

PIN ASSIGNMENT

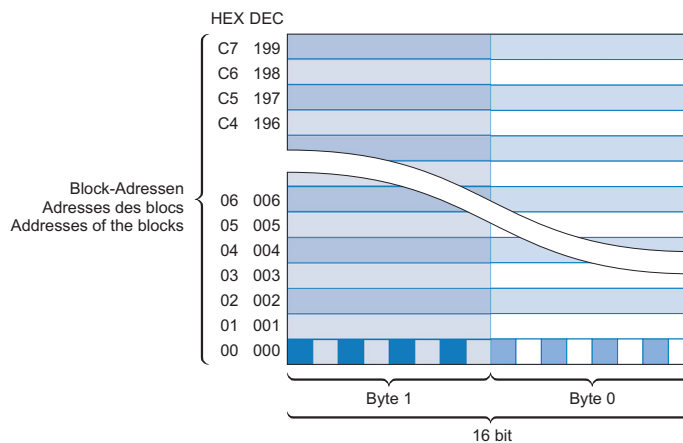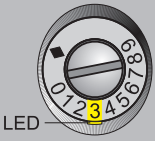| Pin	Signal	Function
1	Ub	+24 V
2	A2	RS-485 - A
3	GND	0V
4	A1	RS-485 - B

M12

COMMUNICATION SETTINGS
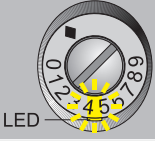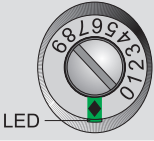
RS-485 characteristics	Value for RLS-1183-020
Data transfer rate (default in bold)	**115 200** / 38 400 / 19 200 baud
Number of bits	8
Number of stop bits	1
Parity	No

MEMORY STRUCTURE OF THE READ/WRITE MODULE

The Read/Write Module has a user memory of 3200 bits organized in 200 blocks of 16 bits. Each block is addressable separately by means of the commands Write RWM and Read RWM.

HEX DEC

C7 199
C6 198
C5 197
C4 196

Block-Adressen
Adresses des blocs
Addresses of the blocks

06 006
05 005
04 004
03 003
02 002
01 001
00 000

Byte 1   Byte 0

16 bit

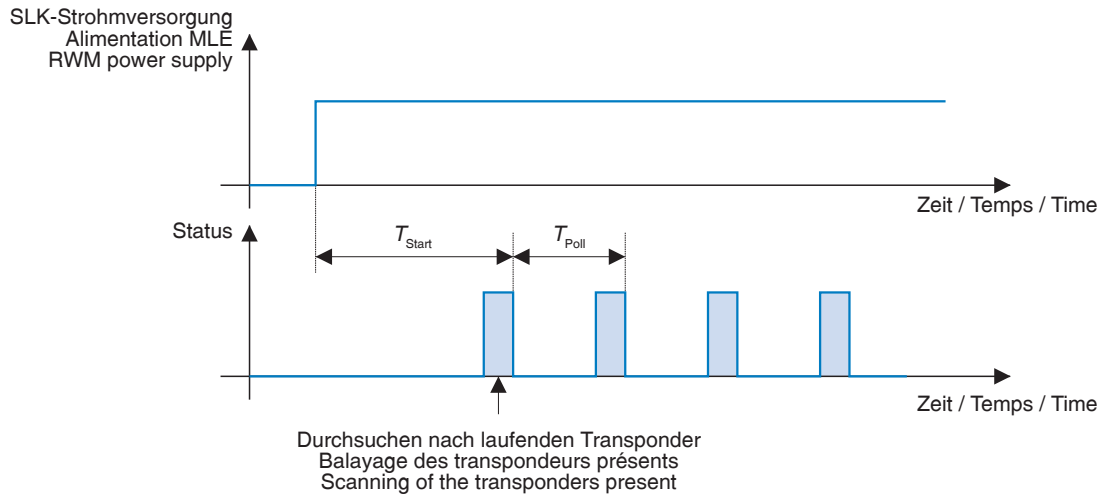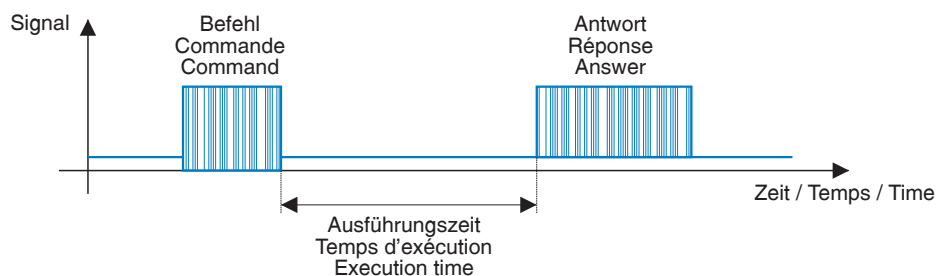|	Value for RLS-1183-020
LED	Yellow LED on mode: physical addressing physical address recognized
LED	LED off Mode: physical addressing physical address not recognized
LED	Yellow LED blinks mode: logical addressing Logical address recognized
LED	Green LED on mode: bootload loading the firmware of the RWM. All the other functions are deactivated

TYPICAL TIMES

Time name	Description	Value
Starting times	Time between the powering of the RWM and the end of the first scanning of the transponders present	300 ms
Polling time	Time for actualization of the list of the transponders present. This time depends on the number of collisions.	70* ms
Execution time of the commands	The execution time is defined as the time between the end of the sending of the command and the beginning of the answer	Command dependent

*Polling time for 16 transponders without collision

SLK-Strohmversorgung
Alimentation MLE
RWM power supply

Zeit / Temps / Time

Status

T_{Start} T_{Poll}

Zeit / Temps / Time

Durchsuchen nach laufenden Transponder
Balayage des transpondeurs présents
Scanning of the transponders present

TYPICAL EXECUTION TIMES BY COMMAND TYPE

| Command type	Description		Value
Commands related to RWM	Typical execution time		1.5 ms
Commands related to Transponder depending on number of blocks	Typical read duration: $T_R = T_0 + N \cdot T_{R0}$ Typical write duration: $T_W = T_0 + N \cdot T_{W0}$	Duration for decoding the command - T_0	12.0 ms
		Read duration for one block (32 bits) - T_{R0}	8.0 ms
		Write duration for one block (32 bits) - T_{W0}	12.0 ms
		Number of blocks concerned - N	
Commands related to Transponder not related to a number of blocks	Typical execution time (e.g. Get System Info, Write AFI, Lock AFI, Write DSFID, Lock DSFID, and so on)		30 ms

Signal

Befehl
Commande
Command

Antwort
Réponse
Answer

Zeit / Temps / Time

Ausführungszeit
Temps d'exécution
Execution time

POSSIBLE COMBINATION AND TYPICAL DISTANCE - RLS-1303-020

Transponder type	S_{max} [mm]	S_0 [mm]	D_0 [mm]	V_{Rmax} [cm/s]*	V_{Wmax} [cm/s]*
Ø 9 RTP-0090-020	14	3	22	110	91.7
Ø 16 RTP-0160-020	31	14	34	170	141.5
Ø 20 RTP-0201-020	25	10	30	150	125
Ø 26 RTP-0263-020	31	13	36	180	150
Ø 30 RTP-0301-020	45	21	48	240	200
Ø 50 RTP-0501-020	60	27	66	330	275
Ø 50 RTP-0502-022	50	22	56	280	233
Ø 50 RTP-0502-062	44.5	17.5	54	270	225
Ø 50 RTP-0502-082	42.5	17	51	255	212.5

*speed values for a distance between RWM and transponder set to S0 and a 32 bits Read or Write operation

$$v_{Rmax} = \begin{cases} \dfrac{D_0}{T_R} = \dfrac{2\cdot(S_{max} - S_0)}{T_0 + N\cdot T_{R0}} & \text{ob / si / if } S_0 > 0 \\[2ex] \dfrac{D_C}{T_R} = \dfrac{2\cdot S_{max}\cdot\sqrt{1 - 2\cdot S_0/S_{max}}}{T_0 + N\cdot T_{R0}} & \text{ob / si / if } S_0 \le 0 \end{cases}$$

$$v_{Wmax} = \begin{cases} \dfrac{D_0}{T_W} = \dfrac{2\cdot(S_{max} - S_0)}{T_0 + N\cdot T_{W0}} & \text{ob / si / if } S_0 > 0 \\[2ex] \dfrac{D_C}{T_W} = \dfrac{2\cdot S_{max}\cdot\sqrt{1 - 2\cdot S_0/S_{max}}}{T_0 + N\cdot T_{W0}} & \text{ob / si / if } S_0 \le 0 \end{cases}$$
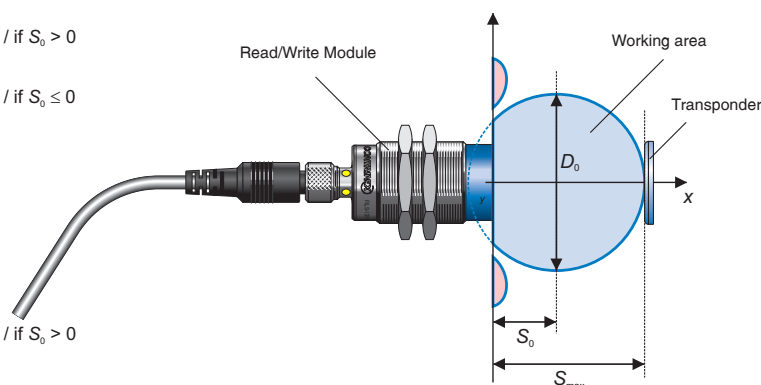
AVAILABLE TYPES

Part number	Part reference	Ø	Mounting	Connection
720 100 105	RLS-1303-020	M30	Non-embeddable	M12 4-pin

DISCLAIMERS

FCC information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note:This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IC information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d`Industrie Canada applicables aux appareils radio exempts de licence. L`exploitation est autorisée aux deux conditions suivantes :

(1) L`appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l`appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d`en compromettre le fonctionnement.

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